




Knowledge, Attitudes, and Practice Regarding COVID-19 among Patients with Musculoskeletal and Rheumatic Diseases in Nepal: A Web-Based Cross-Sectional Study

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Binit Vaidya 
Manisha Bhochhibhoya 
Rikesh Baral 
Shweta Nakarmi 

Department of Rheumatology, National
Centre for Rheumatic Diseases,
Kathmandu, Nepal

Purpose: The global health crisis created by coronavirus disease in 2019, ie, COVID-19, is of serious concern to rheumatologists. The relationship of rheumatic diseases, their therapies, and COVID-19 with multiple genuine and malicious information available online can influence the knowledge and attitudes of rheumatic patients. This Google Forms study was conducted to understand the knowledge, attitudes, and practices of rheumatology patients with regard to COVID-19 in Nepal.

Methods: A web-based cross-sectional study was conducted among patients with rheumatic diseases. A modified version of a questionnaire was used after consent had been obtained. It was then translated into Nepali for comprehensibility. The final questionnaire contained a total of 29 questions: six on demographic parameters and twelve, five, and six on knowledge, attitudes and practice, respectively. Simple descriptive statistics were used to describe the positive responses in each domain. Logistic regression analysis was done to observe demographic variables associated with knowledge, attitudes, and practice.

Results: Among 380 participants, 63.2% were female, the majority (42.1%) aged 18–29 years, and all were literate. Most were aware of the clinical features of COVID-19 (91.6%), 71.5% had positive attitudes toward its control, some (31.5%) thought that they had a greater chance of contracting COVID-19 than others, and 18.9% believed that antirheumatic medications could increase their susceptibility to infection. A majority (>94.7%) of them practiced preventive measures.

Conclusion: Patients with rheumatic diseases were aware of the general clinical features, routes of transmission, and general preventive measures regarding COVID-19 and did not significantly change their treatment practices.

Keywords: SARS-CoV-2, coronavirus, KAP, survey

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) belongs to the coronavirus family responsible for the 2019 pandemic coronavirus disease 19 (COVID-19), which was first identified in Wuhan, China in December 2019.^{1,2} According to a recent World Health Organization report (May 28, 2020), COVID-19 had been confirmed in 216 countries, with more than 5.5 million positive cases and over 350,000 confirmed deaths.³ This global health crisis created by COVID-19 is of serious concern to rheumatologists. Rheumatic diseases compromise patient

Correspondence: Binit Vaidya
Department of Rheumatology, National
Centre for Rheumatic Diseases, Ratopul,
Kathmandu, Nepal
Tel +977 1-446-4288
Email drbinitvaidya@yahoo.com

immunity, and the use of immunosuppressant drugs further compounds this effect.⁴ After the first report of SARS-CoV-2 infection from Nepal in a student who returned from Wuhan,⁵ there has been a rapid implementation of countrywide lockdown and various awareness programs on social media.⁶

Methods

With the help of Google Forms, a cross-sectional study was conducted using a survey questionnaire to understand the knowledge, attitudes, and practices of rheumatic patients regarding COVID-19 in Nepal during the first week of April 2020.

Study Population

Patients with various rheumatologic diseases (eg, rheumatoid arthritis, systemic lupus erythematosus, fibromyalgia, osteoarthritis, and gout) were selected randomly from the patient registry of the National Centre for Rheumatic Diseases (NCRD), Kathmandu, Nepal, comprising a total of around 22,000 patients. A sample of 384 patients was calculated with an estimated 3 million population with rheumatic diseases where the margin of error was 5%. Considering a 30% response rate, 1,160 patients were invited to participate in the survey. A computer-generated random-number table was used to select survey participants based on their registration number.

Survey Instrument

A survey questionnaire constructed by Zhong et al was modified and translated into Nepali for the study.⁷ The corresponding author was contacted via email and permission to use the same questions with modification in terms of rheumatic patients obtained. The modified questionnaire was translated into the native language (Nepali) by two independent Nepali-speaking translators. The Nepali version synthesized by these two translators was back-translated to English by two independent translators (one with a master's degree in journalism with an English major and a postgraduate rheumatology registrar [author MB]). A prefinal Nepali questionnaire was developed after sorting out the differences in understanding of common words after a joint meeting between all four translators and author BV. This prefinal survey instrument was distributed to randomly selected faculty members to assess its comprehensibility and appropriateness (on a score of 0–4) and refinements made as required to facilitate better comprehension and organize the questions before the final version was distributed to the study

population. It contained a total of 29 questions: six pertaining to demographic parameters, including the rheumatic disease they were suffering from, twelve to knowledge about the disease, five to attitude, and six to practices. Responses were classified as true, false, or “not sure” in the knowledge and attitude sections. Open-ended questions were not kept to save the time of respondents and reduce dropout rates.⁸

Procedure

An SMS containing the objective of the study and invitation for participation was sent to each of the selected participants. It mentioned why they were receiving the SMS, and a link to Google Forms was attached in the SMS itself. Assurance of anonymity was mentioned. It was also mentioned that clicking the link implied consent for participation. The link provided was applicable for single use only to avoid multiple entries from the same user. Responses were collected in an Excel sheet.

Ethics

The procedures followed for the study were in accordance with the Declaration of Helsinki. Each participant was informed via SMS that clicking the link would mean implied informed consent for the study. Ethical clearance was obtained from the review board of the National Center for Rheumatic Diseases (NCRD).

Statistical Analysis

All responses were qualitative in nature. Simple descriptive statistics were used to describe the positive responses in each domain. Binary logistic regression analysis was done to observe demographic variables associated with knowledge, attitudes, and practice. SPSS version 21 was used for data analysis, and $p \leq 0.05$ was considered significant. Analysis was done to see the difference in responses in relation to education and use of immunosuppressants.

Results

Questionnaire Preparation

All consultants verifying the questionnaire reported good comprehensibility and appropriateness of the final version (score of 2 or 3). Internal consistency between each item of the questionnaire was satisfactory, with Cronbach's $\alpha = 0.769$.

Survey

A total of 380 patients participated in the survey, the majority being females (63.2%). Around 132 (34.7%) had rheumatoid

arthritis, 68 (17.9%) had connective tissue disease, and 40 (10.5%) had spondyloarthritis requiring treatment with either disease-modifying antirheumatic drugs (DMARDs) or immunosuppressant therapy. The medication being used by the majority (50.5%) was DMARDs (methotrexate and sulfasalazine alone or in combination). Immunosuppressant therapy (cyclophosphamide, mycophenolate mofetil, or azathioprine) and biological agents (adalimumab, etanercept, or tofacitinib) were being used by 7.4% each. Other demographic parameters are mentioned in Table 1.

Knowledge Domain

Most participants were aware of the clinical features, route of transmission, and methods of prevention of COVID-19 (>90%), and 70.6% knew that it could manifest in serious

outcomes in patients with comorbidities. Knowledge results for participants regarding COVID-19 infection is given in Table 2, and was acceptable for most questions.

Attitude Domain

A positive attitude toward control of COVID-19 was seen in a majority (71.5%). A good proportion of participants (31.5%) thought that they had a greater chance of getting COVID-19 than the general population because of their comorbidity (rheumatic disease), and 18.9% believed that the antirheumatic medications they were taking could increase their susceptibility to infection. Responses on the attitude domain are given in Table 3.

Practice Domain

Preventive measures like wearing a mask (94.7%) and avoiding public or crowded places (97.9%) were practiced by an acceptable proportion of participants, while 13.6% of patients reduced the dose of their DMARDs on their own and few admitted stopping medication for fear of infection (4.2%) or unavailability of medicine due to lockdown (8.4%). Details are given in Table 4. There was no difference in attitude or practice changes between higher and lower education ($p=0.969$ and 0.643 , respectively). Also, no difference was observed between those using and not using DMARDs and immunosuppressants in knowledge of symptoms ($p=0.196$), risk of infection ($p=0.607$), or change in dose or discontinuation of medication ($p=0.746$). Binary logistic regression analysis did not show significant relationships between demographic variables like sex ($p=0.669$), education ($p=0.891$), or use of immunosuppressants ($p=0.860$) on responses to knowledge-, attitude-, and practice-related questions.

Discussion

This study found an acceptable level of knowledge among patients with rheumatic diseases regarding the symptoms of COVID-19 infection and measures required for prevention of transmission. Since the first case of SARS-CoV-2 was reported in February from Nepal, after almost 3 months of the beginning of the epidemic in Wuhan, China, we assume that most of the patients had had enough time to get acquainted with general precautionary measures.⁹ From 1,160 invitations, only 380 participated in this web-based survey. A majority of the participants (42%) were aged 18–29 years. This might be explained by easy access to internet services and ease of use for the younger generation. This was a web-based survey, but

Table 1 Demographic Status of the Participants (n=380)

Variables	Sub division	n (%)
Sex	Male	140 (36.8)
	Female	240 (63.2)
Age (years)	18–29	160 (42.1)
	30–39	88 (23.2)
	40–49	52 (13.7)
	50–59	60 (15.8)
	60–69	16 (0.2)
	70 or more	4 (1.0)
Education	SEE	60 (15.7)
	Intermediate	88 (23.2)
	Bachelor's	136 (35.7)
	Master's	96 (25.2)
Occupation	Unemployed	16 (4.3)
	Homemaker	144 (37.8)
	Student	76 (20.0)
	Physical labor	24 (6.3)
	Mental labor	120 (31.6)
Address	Urban	304 (80.0)
	Rural	76 (20.0)
Diagnosis	RA	132 (34.7)
	SLE	68 (17.9)
	SPA	40 (10.5)
	Others	140 (36.9)
Medication used	DMARDs	192 (50.5)
	Immunosuppressant therapy	84 (22.2)
	Biological agents	84 (22.2)
	Others	20 (5.1)

Abbreviations: SEE, secondary education examination; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus; SPA, spondyloarthritis; DMARDs, disease-modifying antirheumatic drugs.

Table 2 Knowledge regarding COVID-19 among participants (n=380)

Proposition	Response	n (%)
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	Yes No Not sure	348 (91.6) 8 (2.1) 6.3
Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with COVID-19.	Yes No Not sure	184 (48.4) 120 (31.6) 76 (20.0)
There is currently no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection.	Yes No Not sure	356 (93.7) 4 (1.0) 20 (5.3)
Not all persons with COVID-19 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are likely to have severe disease.	Yes No Not sure	268 (70.6) 60 (15.8) 52 (13.6)
Eating meat or being in contact animals will result in infection by the COVID-19 virus.	Yes No Not sure	64 (16.9) 168 (44.2) 148 (38.9)
Persons with COVID-19 cannot infect others with the virus when a fever is not present.	Yes No Not sure	16 (4.2) 320 (84.2) 44 (11.6)
The COVID-19 virus spreads via respiratory droplets of infected individuals.	Yes No Not sure	352 (92.6) 16 (4.2) 12 (3.2)
Ordinary residents can wear general medical masks to prevent infection by the COVID-19 virus.	Yes No Not sure	284 (74.8) 60 (15.7) 36 (9.5)
It is not necessary for children and young adults to take measures to prevent infection with the COVID-19 virus.	Yes No Not sure	36 (9.4) 340 (89.5) 4 (1.1)
To prevent infection with COVID-19, individuals should avoid going to crowded places such as gym, theaters and avoid taking public transportations.	Yes No Not sure	372 (97.8) 4 (1.1) 4 (1.1)
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	Yes No Not sure	368 (96.8) 8 (2.1) 4 (1.1)
Contacted persons should isolate for 14 days.	Yes No Not sure	364 (95.8) 4 (1.1) 12 (3.1)

notably only 51.15% of Nepalese use the internet,¹⁰ which is mostly concentrated in urban Nepal. Most of these patients with easy access and internet use would also have access to various online information regarding prevention, symptoms, and recent updates regarding COVID-19, hence the higher percentage of correct responses in the domains of knowledge and attitude.^{11,12}

There are limited sources of information regarding the risks of infection due to rheumatic disease and severity of illness. Any viral infection can have an aggressive course leading to severe disease manifestations and respiratory complications in immunocompromised patients. The true incidence of COVID-19 in patients with rheumatic disease has been reported not to be much higher than the nonrheumatic

Table 3 Attitudes toward COVID-19 among patients (n=380)

Question	Response	n (%)
Do you agree that COVID-19 will finally be successfully controlled?	Yes	272 (71.5)
	No	24 (6.0)
	Not sure	84 (22.2)
Do you think that you have more chance of getting the infection because of your rheumatic disease?	Yes	120 (31.5)
	No	104 (27.3)
	Not sure	176 (46.3)
Do you think that you have more chance of getting the infection because of your medicines?	Yes	72 (18.9)
	No	156 (41.1)
	Not sure	152 (40.0)
Do you think that medicines you are taking have protective effect against COVID-19?	Yes	52 (13.7)
	No	148 (38.9)
	Not sure	180 (47.4)
Do you think that vaccination against flu or pneumonia can have protective effect against COVID-19 for you?	Yes	52 (13.6)
	No	188 (49.5)
	Not sure	140 (36.9)

Table 4 Practice and behavior of participants regarding COVID-19 (n=380)

Question	Response	n (%)
In recent days, have you worn a mask when leaving home?	Yes	360 (94.7)
	No	20 (5.3)
In recent days, have you gone to any crowded place?	Yes	8 (2.1)
	No	372 (97.9)
Have you reduced the dose of medicine you are taking?	Yes	52 (13.6)
	No	328 (86.4)
Have you stopped any medicines you are taking fearing the risk of infection with COVID-19?	Yes	16 (4.2)
	No	364 (95.8)
Have you discontinued any medicine because of lack of availability?	Yes	32 (8.4)
	No	348 (91.6)
Have you taken vaccination for flu or pneumonia with fear of COVID-19?	Yes	12 (3.1)
	No	368 (96.9)

population. Also, the natural history of COVID-19 in these patients is not much different, with very few cases of severe disease reported in patients receiving biological or target-specific agents. These data still would be considered inadequate for any definite recommendation to be made. This study also shows a level of uncertainty in our patients with rheumatic disease, with around a third of patients responding that they felt that they were at increased risk of infection with SARS-CoV-2 due to their disease. A few patients also opted to reduce the dose of their medications, but this practice was not influenced by their use of DMARDs or immunosuppressants.

Various societies have given directives that a reduction or withdrawal of DMARDs is not warranted prophylactically, because of the risk of flare of the underlying disease, which might increase the need for steroids instead.¹³ Such a reduction or withdrawal might be considered in those with symptomatic infections only.

Some commonly used drugs like hydroxychloroquine might have some role in inhibition of SARS-CoV-19 by interfering with the glycosylation of cellular receptors and increasing endosomal pH required for viral fusion.¹⁴ Some guidelines have recommended hydroxychloroquine's use for prophylaxis

and treatment of COVID-19 infection. This might lead to a false sense of security and irresponsible high-risk practice among patients taking these medications. A report suggested that there might be zero protective role of hydroxychloroquine, as 25% of rheumatic patients using this drug had concomitant COVID-19 infections.¹⁵ In contrast to our expectations, only 13.7% of patients considered their medications to have a protective effect, while 86.3% denied or were unsure of this theory. Along with hydroxychloroquine, some studies have shown that medications like JAK inhibitors, IL-1 inhibitors, IL-6 inhibitors, and some intravenous immunoglobulins might have protective actions in COVID-19 infection.¹⁶

Routine vaccination against pneumonia and flu is recommended before initiation of any DMARDs. However, in low- to middle-income countries like Nepal, this practice is seldom followed. As there was an increasing trend of self-seeking of flu vaccination during the swine- and bird-flu epidemics, we also surveyed a change in this practice in our patients after the COVID-19 outbreak. The majority (96.9%), however, denied changing their behavior regarding vaccination practice.

Nepal being in stage 3 of the COVID-19 epidemic, this knowledge regarding general symptoms, transmission, and preventive measures in patients with rheumatic disease should be considered acceptable. However, the findings of this survey highlight caveats in certain aspects of knowledge of our rheumatic patients, and it would thus be helpful to design awareness programs. Future web-based studies should include patient attitudes toward herd immunity, as this provides indirect protection from infection. In cases of SARS-Cov-2, development of herd immunity may be difficult to achieve simultaneously in all geographic regions. Furthermore, long-term natural immunity to this virus is not certain. As such, the development of a vaccine is of great importance for the control and prevention of the disease outbreak.¹⁷

Conclusion

Patients with rheumatic diseases were aware of the general clinical features, route of transmission, and general preventive measures regarding COVID-19. However, there was a significant lack of knowledge regarding susceptibility stratification and recommendations for prevention among those using DMARDs.

Ethical Approval and Informed Consent

Each participant was informed via SMS that clicking the link would mean implied informed consent for the study.

Ethical clearance was obtained from the review board of the National Center for Rheumatic Diseases (NCRD).

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Disclosure

The authors report no conflicts of interest in this work.

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